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Patentanmeldung Nr. Patent application No. Demande de brevet n°

04077912.6

Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

R C van Dijk

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Bezeichnung der Erfindung/Title of the invention/Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se referer à la description.)

A method for applying a tag carrying label on an object

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PL PT RO SE SI SK TR LI

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A method for applying a tag carrying label on an object.

The present invention relates to a method for applying a
RFID (Radio Frequency Identification) tag carrying label on an object,
5 said tag comprising an antenna connected to an integrated circuit
including a receiver and a transmitter.

The invention also relates to an object provided with a RFID
tag.

Such a method is known and used for example for tracing,
10 recognising and identifying different objects such as beverages, blister
packs, cartons, pallets etc. Generally the RFID tag is combined with a
label creating a "smart" RFID label.

It should be noted that it is also known to use RFID tags as
theft prevention on goods, in particular valuable goods such as clothes,
15 bottles of whisky, etc. However these latter RFID tags are generally not
connected to a memory provided for storing data related to the object,
since the tag is generally only calibrated to a particular resonant
frequency, provided to react and trigger an alarm signal when the object
with the tag passes a gate where the resonant frequency is detected.

20 A drawback of the known method is that the tag or label is
rigidly applied on the object. Depending on the composition or shape of
the object on which the tag or label is affixed, the performance of the tag
can be greatly impeded due to the nature of RFID and the laws of
25 physics. In these cases, human intervention is generally required either
for orienting the object or manually entering of the data, which would
normally have been transmitted from the RFID tag. This human
intervention increases the costs and chances of error, and slows down
the whole identifying operation.

30 It is the object of the present invention to provide a method
for applying a RFID tag carrying label, which enables an enhanced

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performance when data processing with the tag is requested, in particular reading and writing at greater distances.

For this purpose, a method according to the invention is characterised in that said tag is provided with a self-adhesive layer, said tag being applied on said label, which label is adhered to said object, in such a manner that the tag is offset from a volume enclosed by said object and forms a freely extending protrusion with respect to said volume. The fact that the tag is offset from the volume enclosed by the object and forms a freely extending protrusion, enables the application of a flexible label so that there is no longer a need to manipulate the object on which the label is applied. As there is no longer a need for manipulating the object, a faster processing is possible. Furthermore the use of a self-adhesive layer enables a fast and reliable application of the label.

A first preferred embodiment of a method according to the invention is characterised in that said tag is applied on a side of said label on which said self-adhesive layer is applied. Adhesion of the tag to the label is thus easily and quickly realised.

A second preferred embodiment of a method according to the invention is characterised in that said protrusion is formed by a flap obtained by:

- determining on said label a stroke having a surface which is at least equal to the tag surface;
- applying said tag along and offset from said stroke;
- folding said stroke towards said tag; and
- applying said stroke over said tag in order to cover the latter.

By folding the stroke towards the tag and applying the stroke on the tag, the latter is covered and well protected.

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Preferably said tag is applied on said label before the latter is applied on said object. The application of the label and the tag to the object is thus easier, as both are applied in a same operation.

5 The invention will now be described in more details with reference to the accompanying drawings showing a preferred embodiment of the method and the object according to the invention.

In the drawings:

figure 1 shows an overall view of an object provided with the label affixed to the object;

10 figure 2 shows a label provided with the RFID tag in an unfolded manner;

figure 3 shows the label in a manner ready to be applied on to the object; and

15 figures 4 and 5 show schematically an embodiment of a device for applying the method according to the invention.

In the drawings a same reference number has been allotted to a same or analogous element.

20 Figure 1 shows an object 1, such as for example a box, provided with a label 2. For the purpose of this invention, label does not infer that there will be any printing on the surface but merely a carrier of the RFID tag. The label is applied to the object offset from the volume taken by the object, in such a manner that it possesses a freely extending protrusion 3 with respect to that volume. The protrusion may extend in whatever direction with respect to the object. So it may extend parallel to the side of the face of the object on which it is applied or perpendicular thereto or make any other angle between 0° and 180° with this side.

25 In the example shown in figure 1, the object is formed by a box. It will however be clear that the object could be a pallet, a bottle, a

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table etc., i.e. any thing, which needs to be identified. The label can be affixed to any side or surface of the object.

The label is preferably made of a flexible material, such as paper or a plastic foil. As illustrated in figure 2, the label 2 according to
5 the invention, is provided with a self-adhesive layer 6 applied on one side thereof. The self-adhesive layer 6 is preferably provided with a liner before application on the object. On the side where the self-adhesive layer is applied, there is also applied a RFID tag 7 comprising an antenna connected to an integrated circuit including a receiver, a transmitter, and
10 preferably also a microprocessor 8. A memory, which could be part of the microprocessor, is also connected to the antenna. The memory is provided for storing data related to the object to be identified.

As is further illustrated in figure 2, the RFID tag 7 is applied on a field 5 which is along and offset of a stroke 4. The stroke 4 has a
15 surface, which is at least equal to the surface covered by the tag. The stroke 4 is preferably chosen along a lateral border of the tag in such a manner that the stroke can easily be folded towards the field 5 where the RFID tag 7 is applied. Once the RFID tag 7 has been applied on the self-adhesive layer, the stroke 4 is folded towards the RFID tag and applied
20 over it to cover the latter as shown in figure 3.

In order to apply the label with the RFID tag to the object, the label 2 is moved over a plate 10 as shown in figure 4. In order to keep the label with the tag 7 on the plate, the plate is provided with perforations beyond which a vacuum is applied. In such a manner, the
25 label is sucked towards the plate 10. The plate is preferably made of steel since this enables a smooth surface over which the label can be transported.

The plate is divided in a plurality, for example four, parts (10-1, 10-2, 10-3 and 10-4). The successive parts are mounted together with hinges 11 in order to pivot among each other. Each part is preferably

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provided with a coating in order to apply a smooth sliding movement of the tags. Typically, pneumatic cylinders 12 are also connected to each part of the plate in order to impose a movement on the parts. However, the present invention is not limited to a pneumatic cylinder and any other means could drive the plate successfully. In such a manner a pivoting movement can be imposed on the part to let them pivot with respect to each other and create an angle among each other as shown in figure 5. A folding of the stroke towards the tag can thus be mechanically realised. The application of the tag on the object is further applied in a manner known per se.

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CLAIMS

- 5 1. A method for applying a RFID (Radio Frequency Identification) tag carrying label on an object, said tag comprising an antenna connected to an integrated circuit including a receiver and a transmitter, characterised in that said label is provided with a self-adhesive layer, said tag being applied on said label, which label is adhered to said object, in such a manner that the tag is offset from a volume enclosed by said object and forms a freely extending protrusion with respect to said volume.
- 10 2. A method as claimed in claim 1, characterised in that said tag is applied on a side of said label on which said self-adhesive layer is applied.
- 15 3. A method as claimed in claim 2, characterised in that said protrusion is formed by a flap obtained by :
 - determining on said label a stroke having a surface which is at least equal to the tag surface;
 - applying said tag along and offset from said stroke;
 - folding said stroke towards said tag; and
 - applying said stroke over said tag in order to cover the latter.
- 20 4. A method as claimed in claim 3, characterised in that said stroke is determined in such a manner as to extend along a border of said label.
- 25 5. A method as claimed in anyone of the claims 1 to 4, characterised in that said tag is applied on said label before the latter is applied on said object
- 30 6. A method as claimed in anyone of the claims 1 to 5, characterised in that said label is made of a flexible material, in particular paper.
- 30 7. An object provided with a label having a tag comprising an antenna connected to an integrated circuit including a receiver and a

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transmitter, characterised in that said label is provided with a self-adhesive layer, said tag being applied on said label, which label is adhered to said object in such a manner that the tag is offset from a volume enclosed by said object and forms a freely extending protrusion with respect to said volume.

5 8. An object as claimed in claim 7, characterised in that said label is made of flexible material, in particular paper.

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ABSTRACT

A method for applying a tag carrying label on an object.

s A method for applying a RFID (Radio Frequency Identification) tag carrying label on an object, said tag comprising an antenna connected to an integrated circuit including a receiver and a transmitter, said label being provided with a self-adhesive layer, said tag being applied on said label, which label is adhered to said object, in such a manner that the tag is offset from a volume enclosed by said object and forms a freely extending protrusion with respect to said volume.
10

Figure 1

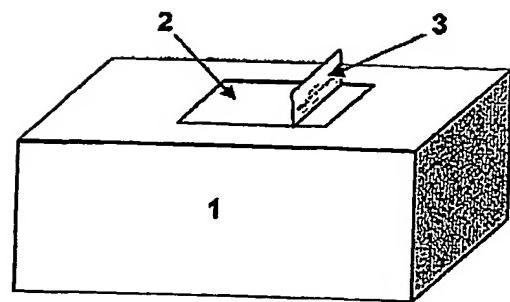


Fig 1

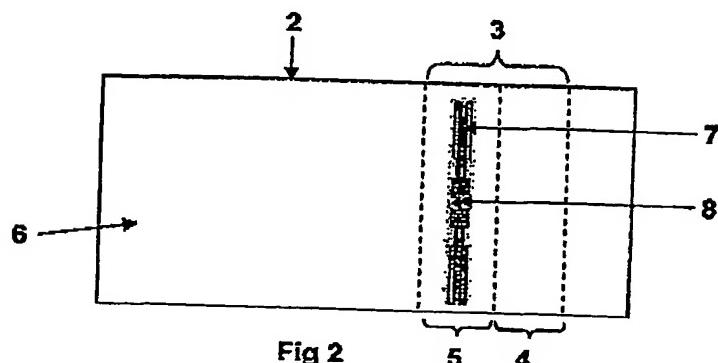


Fig 2

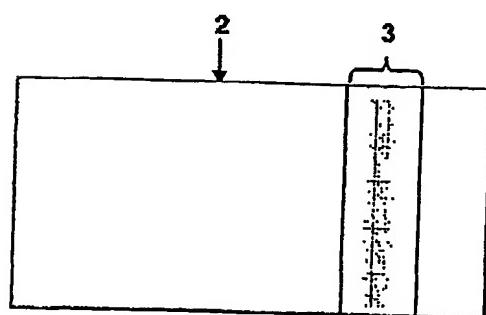


Fig 3

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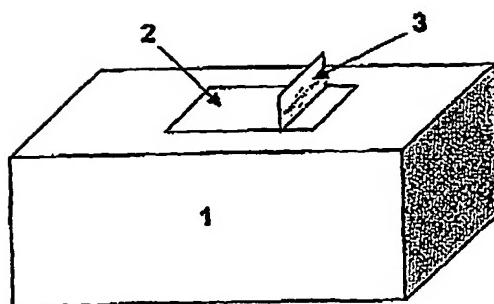


Fig 1

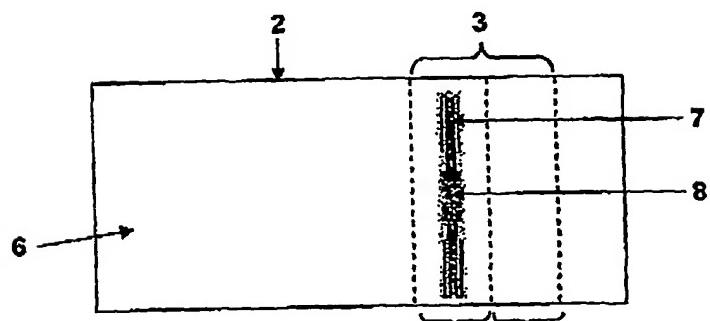


Fig 2

5 4

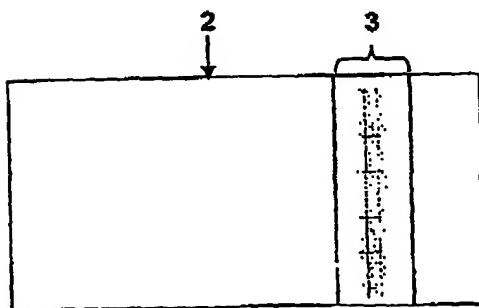
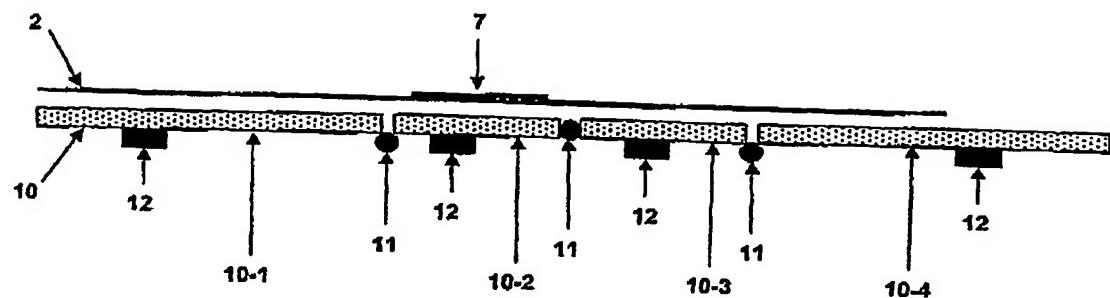
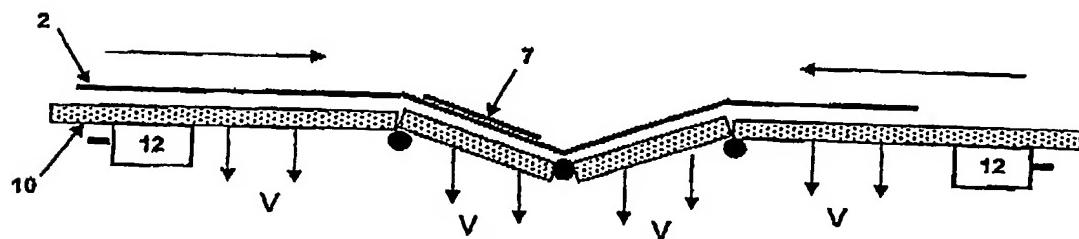


Fig 3

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**Fig 4****Fig 5**

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